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SOVIET USE OF BCh-1 LOADER IN SHAFT SINKING

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In new construction work of the Ministry of the Coal Industry USSR, the BCh-1 pneumatic loader is being used relatively frequently to mechanize rock loading in sinking vertical mine shafts. The machine consists of the loader proper and a pneumatic winch to keep it suspended. Approximately 5,000 meters of shaft were sunk in 1949 with the aid of this loader. The BCh-1 eliminates heavy manual labor in rock loading almost completely, brings about a considerable decrease in the number of workers at the place of operations, and steps up the speed of shaft sinking.

Mechanization of rock loading with the BCh-1 loader was undertaken for the first time in Stalino Oblast in sinking the main shaft of "Yasinovskaya" Mine No 3/5 of Stalinshakhtostroy Trust of Glavdonbassshakhtostroy (Main Administration of the Donbass Mine Construction). The sinking of this shaft was started in June 1948. The chief dimensions of the shaft are, inside diameter, 5.6 meters; outside diameter, 6.3 meters; area of operations, 31.2 square meters; ultimate depth of shaft, 109 meters.

Rock cut during operations consisted of 43.6 percent sandy shale, 43.8 percent clayey shale, 11.3 percent sandstone, 1.3 percent coal. The rock dipped at an angle of 13-18 degrees. The inflow of water into the area of operations amounted to 8 cubic meters per hour. The mine shaft was sunk to a depth of 42 meters with manual rock loading. Below that, to the final depth of 109 meters, mechanized rock loading was carried out by means of the BCh-1 loader.

The following tables indicate performance of the loader:

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Months in 1949	Operating Time (hr)	Rock Brought to Surface (cu m)	Average Hourly Productivity of Loader During Mo (cu m)
Jan	178	1,282	6.5
Feb	98	851	7.8
Mar	201	1,659	7.4
Apr	38	377	9.0

	Workers Employed per Shift	
Type of Work	Manual Method	Mechanized Method
Clearing of wall of mine shaft for installing of lining	1-2	1-2
Operating of signal	1	1
Receiving, setting up, fastening buckets at place of operations, handling drainage	2	2
Manual rock loading	5	--
Servicing of BCh-1 loader	--	2
Total	9-10	6-7

Rock-Loading Method	Volume of Rock Loaded per Cycle (%)
Completely mechanized	80-85
Partially mechanized (loading by BCh-1 loader, manual rock picking)	10-15
Manual loading (picking and clearing operation area)	5-10

The following results were achieved by the introduction of BCh-1 loaders:

1. The work of the shaft sinkers was reduced to controlling and moving the loader (suspended on a cable) and thus was greatly facilitated in comparison with the usual method of loading rock into buckets by shovels.

2. The number of workers at the place of operations was reduced from 9-10 to 6-7 persons per shift.

3. Shift productivity of the sinking brigade at the place of operations became approximately twice as great and labor productivity per workers directly engaged in rock loading became 4-5 times as great as previously.

4. The rate of shaft sinking increased considerably.

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